Health Advisory:

Recommendations for Obstetric Health Care Providers Related to Use of Influenza Antiviral Medications

January 11, 2011

This document will be updated as new information becomes available. The current version can always be viewed at http://www.dhss.mo.gov

The Missouri Department of Health & Senior Services (DHSS) is now using 4 types of documents to provide important information to medical and public health professionals, and to other interested persons:

Health Alerts convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

Health Guidances contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

Health Updates provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require immediate action.

Office of the Director
912 Wildwood
P.O. Box 570
Jefferson City, MO 65102
Telephone: (800) 392-0272
Fax: (573) 751-6041
Web site: http://www.dhss.mo.gov

Health Advisory
January 11, 2011

FROM: **MARGARET T. DONNELLY**
DIRECTOR

SUBJECT: **Recommendations for Obstetric Health Care Providers Related to Use of Influenza Antiviral Medications for the 2010-11 Season**

The Centers for Disease Control and Prevention (CDC) recently released ***Updated Recommendations for Obstetric Health Care Providers Related to Use of Antiviral Medications in the Treatment and Prevention of Influenza for the 2010-2011 Season*** (http://www.cdc.gov/flu/professionals/antivirals/avrec_ob2011.htm?s_cid=ccu010311_007). These recommendations are reproduced below, along with links to additional information on influenza antiviral medications, influenza vaccine, and influenza testing.

The updated CDC recommendations for obstetric providers are consistent with current recommendations for influenza antiviral treatment from the Advisory Committee on Immunization Practices. In addition, CDC convened a meeting of experts on August 12-13, 2010, to review the evidence and provide input on treatment and prevention of influenza during pregnancy. Experts in the fields of influenza, obstetrics, pediatrics, pharmacy, teratology, maternal-fetal medicine, preventive medicine, public health, emergency response, and others participated in the meeting. Data from the 2009-2010 influenza season showed that women who were treated early with antiviral medications were less likely to be admitted to an intensive care unit and less likely to die (Siston et al., 2010; Louie et al., 2010). In addition, available data suggest that neuraminidase inhibitors (oseltamivir and zanamavir) are not teratogenic (Rasmussen et al., 2009; Tanaka et al., 2009; Greer et al., 2010). These treatment recommendations will be updated as needed.

Treatment

- Pregnant women are at higher risk for severe complications and death from influenza. Changes in the immune, respiratory, and cardiovascular systems that occur during pregnancy result in pregnant women being more severely affected by certain pathogens, including influenza.
- Postpartum women, who are in transition to normal immune, cardiac, and respiratory function, should be considered to be at increased risk of influenza-related complications up to 2 weeks postpartum (including following pregnancy loss).
- Treatment with antiviral medications is recommended for pregnant women or women who are up to 2 weeks postpartum (including following pregnancy loss) with suspected or confirmed influenza and can be taken during any trimester of pregnancy.
- For treatment of pregnant women or women who are up to 2 weeks postpartum with suspected or confirmed influenza, oseltamivir is currently preferred. The duration of antiviral treatment is 5 days. See Table 1 (below) for dosing information.

- Hospitalized patients with severe infections (such as those with prolonged infection or who require intensive care unit admission) might require longer treatment courses. Some experts have advocated use of increased (doubled) doses of oseltamivir for some severely ill patients, although there are no published data demonstrating that higher doses are more effective.

- Oseltamivir and zanamivir are antiviral medications that are FDA approved for treatment of influenza. Pregnancy should not be considered a contraindication to oseltamivir or zanamivir use. These medications are "Pregnancy Category C" medications, indicating that no clinical studies have been conducted to assess the safety of these medications for pregnant women. However, the available risk-benefit data indicate that pregnant women with suspected or confirmed influenza should receive prompt antiviral therapy.

- Treatment should be initiated as early as possible because studies show that treatment initiated early (i.e., within 48 hours of illness onset) is more likely to provide benefit. However, some studies of hospitalized patients with influenza, including an analysis of hospitalized pregnant women, have suggested benefit of antiviral treatment even when treatment was started more than 48 hours after illness onset.

- Treatment should not wait for laboratory confirmation of influenza because laboratory testing can delay treatment and because a negative rapid test for influenza does not rule out influenza. Pregnant women are considered to be at higher risk of influenza complications by the Advisory Committee on Immunization Practices, and thus, empiric treatment is recommended. Treatment decisions, especially those involving empiric treatments, should be informed by knowledge of influenza activity in the community.

- At this time, nearly all influenza viruses are susceptible to oseltamivir and zanamivir. However, antiviral treatment regimens might change depending on new antiviral resistance or viral surveillance information.

- Since rapid access to antiviral medications is important, health care providers who care for pregnant and postpartum (including following pregnancy loss) women should develop methods to ensure that treatment can be started quickly after symptom onset. Actions that will support early treatment initiation include:

    - Informing pregnant and postpartum (including following pregnancy loss) women of signs and symptoms of influenza and the need for early treatment after onset of symptoms. Typical manifestations of influenza include fever, cough, rhinorrhea, sore throat, headache, shortness of breath, and myalgia. Some patients with influenza have vomiting, diarrhea, or conjunctivitis, and some have respiratory symptoms without fever.

    - Ensuring rapid access to telephone consultation and clinical evaluation for pregnant and postpartum (including following pregnancy loss) women.

    - Considering empiric treatment of pregnant women and women who are up to 2 weeks postpartum (including following pregnancy loss) based on telephone contact if hospitalization is not indicated and if this will substantially reduce delay before treatment is initiated.

- Fever in pregnant women should be treated because of the risk that it appears to pose to the fetus. Acetaminophen appears to be the best option for treatment of fever during pregnancy.

Chemoprophylaxis

- Post-exposure antiviral chemoprophylaxis can be considered for pregnant women and women who are up to 2 weeks postpartum (including following pregnancy loss) who have had close contact with someone likely to have been infectious with influenza. *Close contact, for the purposes of this document*, is defined as having cared for or lived with a person who has confirmed, probable, or suspected influenza, or having been in a setting where there was a high likelihood of contact with respiratory droplets and/or body fluids of such a person, including having talked face-to-face with a person with suspected, probable, or confirmed influenza illness.

- The drug of choice for chemoprophylaxis of pregnant women and women who are up to 2 weeks postpartum (including following pregnancy loss) is less clear. Zanamivir may be the preferable antiviral for chemoprophylaxis of pregnant women because of its limited systemic absorption. However, respiratory complications that may be associated with zanamivir because of its inhaled route of administration need to be considered, especially in women at risk for respiratory problems. For these women, oseltamivir is a reasonable alternative. The duration of antiviral chemoprophylaxis post-exposure is 10 days after the last known exposure. See Table 1 (below) for dosing information.

- Early treatment is an alternative to chemoprophylaxis for some pregnant and postpartum (including following pregnancy loss) women who have had contact with someone likely to have been infectious with influenza. Clinical judgment is an important factor in treatment decisions. Pregnant women and women who are up to 2 weeks postpartum (including following pregnancy loss) who are given post-exposure chemoprophylaxis should be informed that the chemoprophylaxis lowers but does not eliminate the risk of influenza and that protection stops when the medication course is stopped. Those receiving chemoprophylaxis should be encouraged to seek medical evaluation as soon as they develop a febrile respiratory illness that might indicate influenza.

- All pregnant women should be counseled about the early signs and symptoms of influenza infection and advised to immediately call for evaluation if clinical signs or symptoms develop while these women are pregnant or are in the first two weeks after delivery or pregnancy loss.

Table 1. Antiviral medication dosing recommendations for treatment or chemoprophylaxis of influenza infection

Table extracted from *IDSA guidelines for seasonal influenza* (http://cid.oxfordjournals.org/content/48/8/1003.full)

Agent, group	Treatment	Chemoprophylaxis
Oseltamivir		
Adults	75-mg capsule twice daily for 5 days	75-mg capsule once daily for 10 days
Zanamivir		
Adults	10 mg (2 inhalations) twice daily for 5 days	10 mg (2 inhalations) once daily for 10 days

References:

Greer LG, Sheffield JS, Rogers VL, Roberts SW, McIntire DD, Wendel GD, Jr. Maternal and neonatal outcomes after antepartum treatment of influenza with antiviral medications. *Obstet Gynecol* 2010;115:711-6.

Louie JK, Acosta M, Jamieson DJ, Honein MA. Severe 2009 H1N1 influenza in pregnant and postpartum women in California. *N Engl J Med* 2010;362:27-35.

Rasmussen SA, Jamieson DJ, MacFarlane K, et al. Pandemic influenza and pregnant women: Summary of a meeting of experts. *Am J Public Health* 2009;99 S248-54.

Siston AM, Rasmussen SA, Honein MA, et al. Pandemic 2009 influenza A(H1N1) virus illness among pregnant women in the United States. *JAMA* 2010;303:1517-25.

Tanaka T, Nakajima K, Murashima A, Garcia-Bournissen F, Koren G, Ito S. Safety of neuraminidase inhibitors against novel influenza A (H1N1) in pregnant and breastfeeding women. *CMAJ* 2009;181:55-8.

More information from CDC for medical professionals on influenza antiviral drugs is available at http://www.cdc.gov/flu/professionals/antivirals/index.htm.

Information from CDC for medical professionals on influenza vaccination is available at http://www.cdc.gov/flu/professionals/vaccination/. All persons age 6 months and older, including pregnant and postpartum women, are recommended to receive annual influenza vaccination. Offering flu vaccine at any opportunity, for every patient, is essential. Note that pregnant women should receive inactivated vaccine (flu shot) but should NOT receive the live attenuated vaccine (nasal spray). Postpartum women, even if they are breastfeeding, can receive either type of vaccine.

A recent Health Advisory from the Missouri Department of Health and Senior Services (DHSS) providing guidance for clinicians on the use of rapid influenza diagnostic tests (RIDTs) is available at http://www.dhss.mo.gov/BT_Response/HAds/had122210.pdf.

Links to additional, comprehensive information for medical professionals on seasonal influenza (as well as pandemic and avian influenza) are found on DHSS' Seasonal Influenza website at http://www.dhss.mo.gov/PandemicInfluenza/MedSeasonalFlu.html. The department's main influenza website is located at http://www.dhss.mo.gov/Influenza/.

Medical epidemiology support is available for medical consultations regarding influenza clusters, outbreaks, and clinical testing. Please contact the DHSS Epidemic Intelligence Service (EIS) officer, Philip Lo, MD, at Philip.lo@dhss.mo.gov, or 573/526-1369 (days) or 800/392-0272 (nights, weekends, and holidays).

Health Advisory:

Acute Toxicities in Persons Exposed to Substances Marketed as "Bath Salts"

February 24, 2011

This document will be updated as new information becomes available. The current version can always be viewed at http://www.dhss.mo.gov

The Missouri Department of Health & Senior Services (DHSS) is now using 4 types of documents to provide important information to medical and public health professionals, and to other interested persons:

Health Alerts convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

Health Guidances contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

Health Updates provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require immediate action.

Office of the Director
912 Wildwood
P.O. Box 570
Jefferson City, MO 65102
Telephone: (800) 392-0272
Fax: (573) 751-6041
Web site: http://www.dhss.mo.gov

Health Advisory
February 24, 2011

FROM: **MARGARET T. DONNELLY**
DIRECTOR

SUBJECT: **Acute Toxicities in Persons Exposed to Substances Marketed as "Bath Salts"**

The Missouri Poison Center continues to receive calls from health care providers and the public regarding toxic products marketed as "bath salts". People abusing the mind-altering substances contained in such products could endanger themselves as well as others, and therefore continued usage of products marketed as "bath salts" represents a significant public health threat. The Missouri Department of Health and Senior Services (DHSS) strongly advises that health care providers: 1) consider "bath salts" abuse when evaluating patients presenting with acute toxicities as described below, 2) report all suspected cases of "bath salts" abuse to the Missouri Poison Center at 314/772-5200 (St. Louis) or 800/222-1222 (outside St. Louis), and 3) obtain, as necessary, medical consultation on the management of these patients from the Poison Center.

Background

In 2010 and 2011, Poison Centers representing 43 states and the District of Columbia have received calls about toxic products marketed as "bath salts." Nationally, Poison Centers have already taken 469 calls regarding these products this year, compared to 292 calls in all of 2010. In the first six weeks of 2011, the Missouri Poison Center has already documented 34 exposures to "bath salts" and 11 requests for information about these products, compared to 18 and four, respectively, for the entire 2010 year.

Even though it is technically legal to possess these products, some states, such as Louisiana and Florida, have already issued orders criminalizing their possession. These products, which are being touted as cocaine substitutes, have been sold on the Internet and, in some states, are being sold at gas stations and head shops. They are known by a variety of names, including "Red Dove," "Blue Silk," "Zoom," "Bloom," "Cloud Nine," "Ocean Snow," "Lunar Wave," "Vanilla Sky," "Ivory Wave," "White Lightning," "Scarface," and "Hurricane Charlie." These products are believed to contain the chemicals *Methylenedioxypyrovalerone* (MDPV) and *Methylmethcathinone* (4-MMC, or mephedrone), which are not approved for medical use in the United States. These mind-altering substances cause increased heart rate and blood pressure, as well as agitation, hallucinations, extreme paranoia, and delusions.

A central nervous system (CNS) stimulant, 4-MMC is a designer drug developed from a primary ingredient found in a plant in Africa. The drug's presumed ability is to make users feel more social and interactive. 4-MMC may also appear in certain brands of imported "plant food" packaged in small plastic bags. Another CNS stimulant, MDPV is a stronger stimulant causing powerful energy boosts and increased activity in a person. There is a potential for addiction with the chronic use of these drugs. Packages of "bath salts" usually indicate "not for human consumption", and may contain a combination of both MDPV and 4-MMC. The white powder from the packages is usually snorted like cocaine, can be swallowed, and rarely even injected.

Clinical Presentation

Patients **may** present with typical signs of a CNS stimulant overdose. The pupils may be dilated with slow response to light. Patients have tachycardia, arterial hypertension, and elevated body temperature. The skin is flushed, and the oral mucosa is dry. They speak fast, but dialog with them is complicated because they tend to jump back and forth between subjects. Patients may also present in a psychotic, paranoid, or confused state. They are difficult to restrain, and difficult to sedate with medications usually used in the emergency room for drug overdose. Large doses of MDPV can lead to muscle spasms and dystonia resembling methamphetamine abuse, as well as hallucinations and profound paranoia. As the effect wears off, MDPV users may develop meaningless repetitive motions and behaviors. Due to the stimulatory nature of the substances, seizures are also possible. The length of the substance-induced "high" is variable, but a duration of 3-4 hours is usually expected. Once symptoms start to abate, drug-induced effects wear off relatively quickly, and a depressed mood may develop. There have been reports of suicides a few days after use of MDPV.

The diagnosis of "bath salts" toxicity should be based on the relevant patient history and clinical presentation. Only specially certified laboratories have the ability to test for MDPV, 4-MMC, or related substances. The Missouri State Public Health Laboratory (MSPHL) does not provide testing for MDPV or 4-MMC.

Recommendations

- Health care providers should consider "bath salts" abuse as a possible etiology when evaluating patients presenting with acute toxicities as described above.
- Providers should report all suspected cases of "bath salts" abuse to the Missouri Poison Center at 314/772-5200 (St. Louis) or 800/222-1222 (outside St. Louis).
- Medical consultation on the management of suspected cases can be obtained from the Poison Center.

Health Advisory:

New Guidelines for the Management of Sexually Transmitted Diseases

May 10, 2011

This document will be updated as new information becomes available. The current version can always be viewed at http://www.dhss.mo.gov

The Missouri Department of Health & Senior Services (DHSS) is now using 4 types of documents to provide important information to medical and public health professionals, and to other interested persons:

Health Alerts convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

Health Guidances contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

Health Updates provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require immediate action.

Office of the Director
912 Wildwood
P.O. Box 570
Jefferson City, MO 65102
Telephone: (800) 392-0272
Fax: (573) 751-6041
Web site: http://www.dhss.mo.gov

Health Advisory
May 10, 2011

FROM: **MARGARET T. DONNELLY**
DIRECTOR

SUBJECT: **New Guidelines for the Management of Sexually Transmitted Diseases**

The Centers for Disease Control and Prevention (CDC) recently released "*Sexually Transmitted Diseases Treatment Guidelines—2010*". The 2010 *Treatment Guidelines,* which update the 2006 *Treatment Guidelines*, serve as a source of clinical guidance and advice for health care providers on the most effective treatment regimens, screening procedures, and prevention and vaccination strategies for sexually transmitted diseases (STDs). The complete recommendations can be found in the December 17, 2010, issue of *Morbidity and Mortality Weekly Report* (*MMWR*) *Recommendations and Reports*, which is available at http://www.cdc.gov/std/treatment/2010/default.htm.

Over 19 million cases of STDs occur in the United States each year, with a disproportionate share among young people and racial and ethnic minority populations. The estimated annual direct medical costs of treating STDs and their sequelae are $16.4 billion. Left untreated, STDs can cause serious health problems ranging from infertility to increased risk of HIV infection. Locally, an upward trend among reportable infections continues in Missouri.

Reported Cases of Chlamydia, Gonorrhea, and Primary & Secondary Syphilis, Missouri, 2009-2010

Disease	2009	2010
Chlamydia	25,868	26,049
Gonorrhea	6,488	7,159
Primary & Secondary Syphilis Among Men Who Have Sex with Men (MSM)	135	132
Primary & Secondary Syphilis Among All Others	173	152

The 2010 *Guidelines,* as developed by CDC after consultation with a group of professionals knowledgeable in the field of STDs, are based on newly available evidence and include:

- Expanded STD prevention recommendations, including HPV vaccination;
- Revised gonorrhea treatment regimens;
- New treatment regimens for genital warts and bacterial vaginosis;
- Revised guidance on the diagnostic evaluation and management of syphilis among HIV-infected persons.

Highlights of the 2010 *Treatment Guidelines* include:

- **Uncomplicated gonococcal infections of the cervix, urethra and rectum**

  Treatment recommendations have been revised as follows:

  Ceftriaxone 250 mg IM in a single dose

  OR, IF NOT AN OPTION

  Cefixime 400 mg orally in a single dose

  OR

  Single-dose injectible **cephalosporin** regimens

  PLUS

  Azithromycin 1g orally in a single dose

  OR

  Doxycycline 100 mg orally twice a day for 7 days

  Patients infected with *Neisseria gonorrhoeae* frequently are co-infected with *Chlamydia trachomatis*. This finding has led to the recommendation that patients treated for gonococcal infection also be treated routinely with a regimen that is effective against uncomplicated genital *C. trachomatis* infection (recommended treatment for chlamydial infection is with azithromycin or doxycycline). Note that this recommendation also holds for persons whose chlamydia test is negative. Because most gonococci in the U.S. are susceptible to azithromycin or doxycycline, routine co-treatment might also hinder the development of antimicrobial-resistant *N. gonorrhoeae*.

- **Syphilis among HIV-Infected Persons**

  HIV-infected persons should be evaluated clinically and serologically for treatment failure at 3, 6, 9, 12 and 24 months post-therapy. CSF examination and retreatment should be strongly considered for persons whose nontreponemal test titers do not decrease four-fold within 6-12 months of therapy. If CSF examination is normal, treatment with benzathine penicillin G administered at 2.4 million units IM each at weekly intervals for three weeks is recommended.

In response to the late 2010 increase in syphilis cases in the St. Louis area among men who have sex with men (MSM), the Missouri Department of Health and Senior Services (DHSS) recommends the following:

1) All HIV-infected MSM, regardless of their area of residence, should be screened for syphilis at least every 6 months;

2) In addition, in the St. Louis area, all HIV-negative and HIV-status unknown MSM whose sexual behaviors put them at higher risk for STDs should be screened for syphilis at least every 6 months. Such behaviors include, but are not limited to, multiple sex partners, a new sexual partner, trading sex for money and/or drugs, anonymous sex, having a history of a bacterial STD, or having a sexual partner who engages in high risk behaviors.

Further information regarding the 2010 increase in St. Louis area syphilis cases can be found at http://www.dhss.mo.gov/emergencies/ert/alertsadvisories/pdf/HAd10-26-10.pdf.

Questions can be directed to DHSS' Bureau of HIV, STD, and Hepatitis at 573/751-6439.

Health Advisory:

Shiga Toxin-producing *E. coli* O104 (STEC O104:H4) Infections in U.S. Travelers Returning from Germany

June 3, 2011

This document will be updated as new information becomes available. The current version can always be viewed at http://www.dhss.mo.gov

The Missouri Department of Health & Senior Services (DHSS) is now using 4 types of documents to provide important information to medical and public health professionals, and to other interested persons:

Health Alerts convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

Health Guidances contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

Health Updates provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require immediate action.

Office of the Director
912 Wildwood
P.O. Box 570
Jefferson City, MO 65102
Telephone: (800) 392-0272
Fax: (573) 751-6041
Web site: http://www.dhss.mo.gov

Health Advisory
June 3, 2011

FROM: **MARGARET T. DONNELLY**
DIRECTOR

SUBJECT: **Shiga Toxin-producing E. coli O104 (STEC O104:H4) Infections in U.S. Travelers Returning from Germany**

A large outbreak of Shiga toxin-producing *Escherichia coli* O104:H4 (STEC O104:H4) infections is currently ongoing in Germany. Associated with these infections are a significant number of cases of hemolytic-uremic syndrome (HUS) requiring hospitalization, and in some instances intensive care, and deaths have occurred.

On June 3, the Centers for Disease Control and Prevention (CDC) issued a Health Advisory on this situation for health care providers. This Health Advisory is reproduced below, along with additional information for providers in Missouri. To date, three cases of HUS in the United States have been reported in persons who recently traveled to Hamburg, Germany. In Missouri, no cases in recent travelers to Germany have been reported.

Notice to Health Care Providers — Shiga Toxin-producing *E. coli* O104 (STEC O104:H4) Infections in U.S. Travelers Returning from Germany

CDC Health Advisory
June 3, 2011

CDC is monitoring a large outbreak of Shiga toxin-producing *Escherichia coli* O104:H4 (STEC O104:H4) infections ongoing in Germany. The responsible strain shares virulence characteristics with enteroaggregative *E. coli* (EAEC). As of May 31, 2011, the Robert Koch Institute (RKI) reported 470 patients with hemolytic uremic syndrome, or HUS (a severe condition associated with STEC infection that can lead to kidney failure), and nine deaths. The strain of STEC that is causing this illness, STEC O104:H4 is very rare. The illness that it causes is similar to that caused by *E. coli* O157:H7 or STEC O157:H7, which is also a Shiga toxin-producing *E. coli*.

CDC is not aware of any cases of STEC O104:H4 infection ever being previously reported in the United States. However, as of May 31, 2011, three cases of HUS in the United States have been reported in persons who recently traveled to Hamburg, Germany. CDC is working with state health departments to learn more about these suspected cases and obtain bacterial isolates for further characterization.

CDC has recommended that any person who has recently traveled to Germany and has signs or symptoms of STEC infection, or HUS, should seek medical care and let the medical provider know about the outbreak of STEC infections in Germany and the importance of being tested for STEC infection.

Symptoms of STEC infection include severe stomach cramps, diarrhea (which is often bloody) and vomiting. If there is fever, it usually is not very high. Most people get better within 5–7 days, but some patients go on to develop HUS, usually about a week after the diarrhea starts. The classic triad of findings in HUS is acute renal damage, microangiopathic hemolytic anemia (evidence of schistocytes and helmet cells on peripheral blood smear), and thrombocytopenia.

It is not recommended to give antibiotics to patients with suspected STEC infections until complete diagnostic testing can be performed and STEC infection is ruled out. Some studies have shown that administering antibiotics in patients with STEC infections might increase their risk of developing HUS. However, clinical decision making must be tailored to each individual patient. There may be indications for antibiotics in patients with severe intestinal inflammation if perforation is of concern. Of note, isolates of STEC O104:H4 from patients in Germany have demonstrated resistance to multiple antibiotics.

Guidelines to ensure as complete as possible detection and characterization of STEC infections include the following:

- All stools submitted for testing from patients with acute community-acquired diarrhea should be cultured for STEC O157:H7. These stools should be simultaneously assayed for non-O157 STEC with a test that detects the Shiga toxins or the genes encoding these toxins.
- Clinical laboratories should report and send *E. coli* O157:H7 isolates and Shiga toxin-positive samples to state or local public health laboratories as soon as possible for additional characterization.
- Specimens or enrichment broths in which Shiga toxin or STEC are detected, but from which O157:H7 STEC isolates are not recovered, should be forwarded as soon as possible to a state or local public health laboratory so that non-O157:H7 STEC can be isolated.
- It is often difficult to isolate STEC in stool by the time a patient presents with HUS. Immunomagnetic separation (IMS) has been shown to increase recovery of STEC from HUS patients. For any patient with HUS without a culture-confirmed STEC infection, stool can be sent to a public health laboratory that performs IMS or to the CDC (through a state public health laboratory). In addition, serum can be sent to CDC (through a state public health laboratory) for serologic testing of common STEC serogroups.

The benefits of adhering to the recommended testing strategy include early diagnosis, improved patient outcome, and detection of all STEC serotypes.

[Laboratory consultation is available from the Missouri State Public Health Laboratory (MSPHL) by calling 573/751-3334, or 800/392-0272 (24/7).]

All patients with Shiga toxin-positive diarrheal illness or HUS should be reported to [public health officials], regardless of a travel history to Germany. [In Missouri, report all known or suspected cases to your local public health agency, or to the Missouri Department of Health and Senior Services (DHSS) at 800/392-0272 (24/7).]

Questions should be directed to DHSS' Bureau of Communicable Disease Control and Prevention at 573/751-6113 or 800/392-0272 (24/7).

For more information:

Robert Koch Institute
http://www.rki.de/EN/Home/homepage__node.html

EHEC O104:H4 (Robert Koch Institute)
http://www.rki.de/cln_109/nn_217400/EN/Home/EHEC__O104__H4,templateId=raw,property=publicationFile.pdf/EHEC_O104_H4.pdf

Investigation Announcement: Outbreak of Shiga toxin-producing E. coli O104 (STEC O104:H4) Infections Associated with Travel to Germany (CDC)
http://www.cdc.gov/ecoli/2011/ecolio104/

Updated information for travelers to Germany is available on CDC's Travelers Web site at:
http://wwwnc.cdc.gov/travel/

Health Advisory:

High Number of Reported Measles Cases in the U.S. in 2011—Linked to Outbreaks Abroad

June 24, 2011

This document will be updated as new information becomes available. The current version can always be viewed at http://www.health.mo.gov

The Missouri Department of Health & Senior Services (DHSS) is now using 4 types of documents to provide important information to medical and public health professionals, and to other interested persons:

Health Alerts convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

Health Guidances contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

Health Updates provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require immediate action.

Office of the Director
912 Wildwood
P.O. Box 570
Jefferson City, MO 65102
Telephone: (800) 392-0272
Fax: (573) 751-6041
Web site: http://www.health.mo.gov

Health Advisory
June 24, 2011

FROM: MARGARET T. DONNELLY
DIRECTOR

SUBJECT: High Number of Reported Measles Cases in the U.S. in 2011—Linked to Outbreaks Abroad

On June 22, the Centers for Disease Control and Prevention (CDC) issued a Health Advisory entitled "High Number of Reported Measles Cases in the U.S. in 2011—Linked to Outbreaks Abroad." The contents of this Health Advisory, along with some additional information, are provided here.

Summary and Background
The United States is experiencing a high number of reported measles cases in 2011, many of which were acquired during international travel. From January 1 through June 17 this year, 156 confirmed cases of measles were reported to CDC. This is the highest reported number since 1996. Most cases (136) were associated with importations from measles-endemic countries or countries where large outbreaks are occurring. The imported cases involved unvaccinated U.S. residents who recently traveled abroad, unvaccinated visitors to the United States, and people linked to these imported cases. To date, 12 outbreaks (3 or more linked cases) have occurred, accounting for 47% of the 156 cases. Of the 139 case-patients who were U.S. residents, 86 (62%) were unvaccinated, 30 (22%) had undocumented vaccination status, 11 (8%) had received 1 dose of measles-mumps-rubella (MMR) vaccine, 11 (8%) had received 2 doses, and 1 (1%) had received 3 (documented) doses.

As of June 21, no measles cases have been reported in Missouri in 2011.

Measles was declared eliminated in the United States in 2000 due to our high 2-dose measles vaccine coverage, but it is still endemic or large outbreaks are occurring in countries in Europe (including France, the United Kingdom, Spain, and Switzerland), Africa, and Asia (including India). The increase in measles cases and outbreaks in the United States this year underscores the ongoing risk of importations, the need for high measles vaccine coverage, and the importance of prompt and appropriate public health response to measles cases and outbreaks.

Measles is a highly contagious, acute viral illness that is transmitted by contact with an infected person through coughing and sneezing. After an infected person leaves a location, the virus remains contagious for up to 2 hours on surfaces and in the air. Measles can cause severe health complications, including pneumonia, encephalitis, and death.

Recommendations for Health Care Providers
Although there have been no reported cases in Missouri, the best defense for continued protection is immunization.

- Ensure all patients are up to date on the MMR vaccine* and other vaccines.
- Exposure to measles is not a contraindication to immunization. Available data suggest that the measles vaccine, if given within 72 hours of measles exposure, will provide protection in some cases. If the exposure does not result in infection, the vaccine should induce protection against subsequent measles exposures. (AAP. *Red Book*, 2009; p. 447)

- For those who travel abroad, CDC recommends that all U.S. residents older than 6 months be protected from measles and receive the MMR vaccine, if needed, prior to departure.
  - Infants 6 through 11 months old should receive 1 dose of the MMR vaccine before departure.†
  - Children 12 months of age or older should have documentation of 2 doses of the MMR vaccine (separated by at least 28 days).
  - Teenagers and adults without evidence of measles immunity** should have documentation of 2 appropriately spaced doses of the MMR vaccine.

- Consider measles as a diagnosis in anyone with a febrile rash illness lasting 3 days or more, a temperature of 101ºF (38.3ºC) or higher, and clinically compatible symptoms (cough, coryza, and/or conjunctivitis) who has recently traveled abroad or who has had contact with someone with a febrile rash illness. Immunocompromised patients may not exhibit rash or may exhibit an atypical rash. The incubation period for measles from exposure to fever is usually about 10 days (range, 7 to 12 days) and from exposure to rash onset is usually 14 days (range, 7 to 21 days).

- Isolate suspect measles case-patients and immediately report cases to the local public health agency, or to the Missouri Department of Health and Senior Services (DHSS) at 866-628-9891, to ensure a prompt public health response.

- Obtain a single blood/serum specimen for IgM serology testing. Specimens may be referred to the Missouri State Public Health Laboratory after consultation with the local public health agency or DHSS representative. Viral specimens may be collected for confirmation and viral genotyping. For more information, go to http://health.mo.gov/lab/.

- The sensitivity of measles IgM assays varies and may be diminished during the first 72 hours after rash onset. If the result is negative for measles IgM and the patient has a generalized rash lasting more than 72 hours, a second serum specimen should be obtained and the measles IgM test should be repeated. (AAP. *Red Book*, 2009; p. 446)

* Children 1 through 12 years of age may receive the MMRV vaccine for protection against measles, mumps, rubella, and varicella; however, MMRV vaccine is currently unavailable.

† Infants who receive a dose of MMR vaccine before their first birthday should receive 2 more doses of MMR vaccine, the first of which should be administered when the child is 12 through 15 months of age and the second at least 28 days later.

** One of the following is considered evidence of measles immunity for international travelers: 1) birth before 1957, 2) documented administration of 2 doses of live measles virus vaccine (MMR, MMRV, *or* measles vaccines), 3) laboratory (serologic) proof of immunity, *or* 4) documentation of physician-diagnosed measles.

Questions should be directed to the DHSS Bureau of Immunization Assessment and Assurance at 573-751-6124.

For more information:

CDC. Measles among Unvaccinated U.S. Residents Aged 6–23 Months Who Have Traveled Outside the United States, 2001–2011. *MMWR*. 2011;60:397–400.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6013a1.htm?s_cid=mm6013a1_w

CDC. Measles—United States, January–May 20, 2011. *MMWR*. 2011;60;666–8.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6020a7.htm

CDC. Notes from the Field: Measles Outbreak—Hennepin County, Minnesota, February–March 2011. *MMWR*. 2011;60:421.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6013a6.htm?s_cid=mm6013a6_w

DHSS' Immunizations website
http://health.mo.gov/living/wellness/immunizations/index.php

CDC's Measles (Rubeola) website
http://www.cdc.gov/measles/index.html

CDC's Measles Vaccination website
http://www.cdc.gov/measles/vaccination.html

CDC's Travelers' Health: In the News, 2011 Measles Update
http://wwwnc.cdc.gov/travel/notices/in-the-news/measles.htm

M*e*dScape Today: CDC Expert Commentary: Measles: What You Might Not Know Recognizing, diagnosing, and preventing measles (running time: 5:20 mins)
http://www.medscape.com/viewarticle/741206